

1-5 25. (Amended) A unit for monitoring an optical signal, being transmitted in an optical network, said unit comprising:

a coupler, being arranged to be inserted along a optical transmission path of said optical network, said coupler having a main in- and output, respectively, for receiving and transmitting said optical signal and at least one drop output, to which a portion of said optical signal is droppable, said drop output being connected with one of a spectrometer module comprising an input, for receiving an incoming optical signal, a variable differential group delay (DGD) element, for applying a variable birefringence retardation to said incoming optical signal, and a detector unit for detecting the power in a defined state of polarisation of a signal exiting said variable DGD element, and a monitor module as described in claim 20.

26. (Amended) A monitoring system for an optical network, comprising a plurality of network elements, such as transmitters, receivers, transmission lines, amplifiers or the like, said monitoring system comprising:

two or more monitoring stations, each of said monitoring stations being positioned between two network elements of said optical network and each of said stations comprising one of a spectrometer module comprising an input, for receiving an incoming optical signal, a variable differential group delay (DGD) element, for applying a variable birefringence retardation to said incoming optical signal, and a detector unit for detecting the power in a defined state of polarisation of a signal exiting said variable DGD element; a monitor module for measuring properties such as power, state of polarisation and degree of

polarisation of an incoming optical signal as a function of wavelength, said monitor module comprising a polarisation control module being connected with a control unit, a spectrometer module, being connected with said control unit, and a polariser being placed between said polarisation control module and spectrometer module; and a monitoring unit as in claim 25, and

a monitoring hub, being connected with each monitoring station, said hub being arranged to receive measured signal data from each of said monitoring stations, and said monitoring hub comprising a processing unit for processing said measured signal data.